IBM Parallel Environment for Linux, V4.3 delivers enhancements for IBM System x clusters, including a parallel debugger

Overview
Parallel Environment for Linux™ Multiplatform (IBM System x™, eServer® 325, 326 servers) is a high-function development and execution environment for parallel applications running on one or more Intel® processor-based and AMD processor-based IBM servers running the Linux operating system.

Parallel Environment for Linux Multiplatform can offer High Performance Computing (HPC) customers whose parallel applications use the industry-standard Message Passing Interface (MPI) a tool for creating and using parallel applications with a familiar look and feel.

The IBM MPI implementation exploits an enhanced low-level application programming interface (LAPI) designed to increase parallel application performance on clusters made up of supported IBM systems running the Linux operating system.

V4.3 provides support for Red Hat Enterprise Linux (RHEL) 4, SUSE Linux Enterprise Server (SLES) 9, and SLES 10. Enhancements include:
- Supports up to 512 nodes and 4,096 tasks.
- Adds parallel debugger (pdb).
- Adds SLES 10 support.
- Provides IP support on various interconnects; IP mode uses the standard UDP/IP protocol which is available on many interconnects.
- Includes performance improvements to selected MPI collective communication subroutines.
- Substantially improves MPI one-sided communication performance.
- Includes the Parallel Operating Environment (POE) that will copy user hard limit and soft limit values for non-LoadLeveler® interactive jobs.

Key prerequisites
Parallel Environment for Linux, V4.3 runs on the following:
- System x servers
- IBM eServer 325 or 326 servers with either
  - SUSE Linux Enterprise Server 10
  - SUSE Linux Enterprise Server 9, Service Pack 3
- Red Hat Enterprise Linux 4.4

Planned availability date
October 27, 2006

At a glance
Parallel Environment can offer high performance and fast job turn-around time for numerically intensive and demanding scientific, technical, and strategic business applications.

Parallel Environment for Linux Multiplatform, V4.3 delivers the following benefits:
- Provides support for parallel application development and execution on System x servers (Intel processor-based), and IBM AMD processor-based (e325, e326) servers running the Linux operating system
- Exploits UDP/IP communication on various interconnects
- Adds support with SUSE Linux Enterprise Server 10
Description

Accessibility by people with disabilities

A U.S. Section 508 Voluntary Product Accessibility Template (VPAT) containing details on the products accessibility compliance can be requested via IBM’s web site at


Product positioning

Parallel Environment can be beneficial for high-performance cluster customers who demand effective tools for developing, debugging, analyzing, tuning, and running parallel C/C++ and Fortran applications that use the industry-standard MPI. It is designed to ease application porting and development and to increase application performance on IBM System x clusters.

Parallel Environment is the IBM strategic, high-function development and execution environment for parallel applications. It is designed to exploit SMP nodes when available and to run single or multi-threaded applications and the MPI message-passing API.

Parallel Environment for Linux can be beneficial for high-performance cluster customers who:

• Require high performance and fast job turn-around time for numerically intensive and demanding scientific, technical, and strategic business applications running the Linux operating system
• Want to exploit parallel computing as a means of obtaining greater performance in a production environment
• Seek ways to improve resource utilization and reduce the time to a solution or solve larger problems by exploiting parallel processing in a cluster environment

Reference information

• Software Announcement 206-250, dated October 10, 2006
• Software Announcement 206-247, dated October 10, 2006

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eServer and LoadLeveler are registered trademarks of International Business Machines Corporation in the United States or other countries or both.
Intel is a registered trademark of Intel Corporation.
Linux is a trademark of Linus Torvalds in the United States, other countries or both.
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Offering Information

Product information is available via the Offering Information Web site

http://www.ibm.com/common/ssi

Also, visit the Passport Advantage® Web site

http://www.ibm.com/software/passportadvantage

Publications

No publications are shipped with this program.

The following publications are available from the Web:

- IBM Parallel Environment for Linux™: Introduction (SA23-2218)
- IBM Parallel Environment for Linux: Installation (SC23-5208)
- IBM Parallel Environment for Linux: Operation and Use (SA23-2217)
- IBM Parallel Environment for Linux: MPI Programming Guide (SA23-2219)
- IBM Parallel Environment for Linux: MPI Subroutine Reference (SA23-2220)
- IBM Parallel Environment for Linux: Messages (SA38-0648)

To access all Parallel Environment documentation in PDF and HTML formats, including the most recent, visit the IBM eServer® Cluster Information Center Web site

http://publib.boulder.ibm.com/infocenter/clresctr/index.jsp

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Technical information

Hardware requirements

Parallel Environment for Linux, V4.3 is supported on the following IBM System servers running the Linux operating system:

- System x™
- eServer 325 and 326

Note: Parallel Environment in IP mode uses the standard UDP/IP protocol, which is available on many interconnects. Parallel Environment in IP mode is tested extensively on 1 Gb Ethernet.

Software requirements: Service update 4.3.0-1 of Parallel Environment is required.

Any of the following Linux distributions:

- SLES 9, Service Pack 3
- SLES 10
- RHEL 4.4

For development, the GNU — Open Software Foundation compiler is required.

Parallel Environment for Linux service update 4.3.0-1 can be obtained from the Cluster Service Web site


Limitations

- Parallel Environment for Linux, V4.3 does not interoperate between different node types or different Linux distributions. All of the nodes used in a parallel job must be of the same type, running the same level of operating system (including service levels), same Linux distribution, and same level for all portions of the Parallel Environment package.

- Parallel Environment for Linux offers a thread-safe MPI library supporting all of MPI 1.1, 1.2, and 2.0, except the functions specified in the "MPI-2: Extensions to the Message Passing Interface" chapter on "Process Creation and Management" found at the MPI Web site

http://www.mpi-forum.org/docs/docs.html

Performance considerations: Parallel Environment and the MPI library are intended for use in HPC applications that can exploit multiple processors to achieve parallelism, using message passing to pass data among the processors where necessary. In such environments, performance of the interconnecting network is important. Enhanced IP performance is achieved with a dedicated, high-performance IP network within the cluster to be used for MPI communication.

Jobs with large task counts are often constrained by the amount of memory available to a process. This version of Parallel Environment uses less memory for jobs with larger task counts than prior versions and may improve performance by allowing a larger problem data space to be maintained in real memory.
Planning information

Ensure all of the nodes to be used in a parallel job are of the same processor type (AMD or Intel®) running the same level of operating system, same Linux distribution and same level for all portions of the Parallel Environment package.

Customers wishing to expand their Parallel Environment jobs beyond 4,096 tasks may submit a special bid.

Packaging: This program is distributed as a single package available via CD-ROM media (LCD8-0281). A product README file and license information file is shipped with the product.

Security, auditability, and control

Parallel Environment for Linux uses the security and Auditability features of the Linux operating system. The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities.

Software Services

IBM Services has the breadth, depth, and reach to manage your services needs. You can leverage the deep technical skills of our lab-based, software services team and the business consulting, project management, and infrastructure expertise of our IBM Global Services team. Also, we extend our IBM Software Services reach through IBM Business Partners to provide an unmatched portfolio of capabilities. Together, we provide the global reach, intellectual capital, industry insight, and technology leadership to support any critical business need.

To learn more about IBM Software Services or to contact a software services sales specialist, visit

http://www.ibm.com/software/sw-services/

Ordering information

This product is only available via Passport Advantage. It is not available as shrinkwrap.

Product Group: Other Software
Product Identifier Description (PID)
Parallel Environment for Linux (5724-N05)

Product Category: Parallel Environment

Charge metric

Program name
Part number or PID number
Charge metric
Parallel Environment for Linux 5724-N05 10 processor Value Units

Value Unit: A Value Unit is a pricing charge metric for program license entitlements which is based upon the quantity of a specific designated measurement used for a given program. Each program has a designated measurement. The most commonly used designated measurement is a processor core. However, for select programs, there are other designated measurements such as users, client devices, and messages.

The number of Value Unit entitlements required for a program depends on how the program is deployed in your environment and must be obtained from a Value Unit table. You must obtain a Proof of Entitlement (PoE) for the calculated number of Value Unit entitlements for your implementation. The Value Unit entitlements are specific to a program and may not be exchanged, interchanged, or aggregated with Value Unit entitlements of another program.

A processor (commonly called a CPU or core) is a functional unit within a computing device that interprets and executes instructions. A processor consists of at least an instruction control unit and one or more arithmetic or logic unit. Not all processors require the same number of Value Unit entitlements. To calculate the number of Value Unit entitlements required, refer to the processor Value Unit table at the following Web site


With full capacity licensing, a PoE must be acquired for the appropriate number of Value Units based on all activated processors available for use on the server.

Managed processor

A processor (commonly called a “CPU” or “core”) is a functional unit within a computing device that interprets and executes instructions. A processor consists of at least an instruction control unit and one or more arithmetic and/or logic unit. With multi-core technology each core is considered a processor. A POE must be acquired for all activated processors on the server in the computing environment affiliated with the program or component of the program rather than on the server where the program or component of the program is run.

Value Unit: A Value Unit is a pricing charge metric for program license entitlements which is based upon the quantity of a specific designated measurement used for a given program. Each program has a designated measurement. The most commonly used designated measurement is a processor core. However, for select programs, there are other designated measurements such as users, client devices, and messages. The number of Value Unit entitlements required for your specific implementation of the given program must be obtained from a conversion table associated with the program. You must obtain a POE for the appropriate number of Value Unit entitlements for Your implementation. The Value Unit entitlements of a given program cannot be exchanged, interchanged, or aggregated with Value Unit entitlements of another program.

A processor (commonly called a “CPU” or “core”) is a functional unit within a computing device that interprets and executes instructions. A processor consists of at least an instruction control unit and one or more arithmetic and/or logic unit. With multi-core technology each core is considered a processor. Not all processors require the same number of Value Unit entitlements. To determine the number of Value Unit entitlements required, refer to the processor value unit conversion table on the Passport Advantage Web site

http://www.ibm.com/software/passportadvantage

With full capacity licensing, a POE must be acquired for the appropriate number of value units based on all activated processors on the server available to the Program or a component of the Program.
Passport Advantage

Program name:description Part number
Par Envir for Linux Multiplatform BH03GEN
Media Package Eng 4.3 D58CPLL
Par Envir for Linux 10 Value Unit LIC+SW MAINT 12 MO D58CDLL
Par Envir for Linux 10 Value Unit ANNUAL SW MAINT RNWL E02JLLL
Par Envir for Linux 10 Value Unit SW MAINT REINSTATE 12MO D58CDLL

Passport Advantage customer: Media pack entitlement details

Customers with active maintenance or subscription for the products listed are entitled to receive the corresponding media pack.

Entitled maintenance offerings description
Parallel Environment for Linux

Media packs Part description number
Par Envir for Linux Multi BH03GEN
Media Package English

Withdrawal of previous Passport Advantage part numbers: There are no IPLA software Media Pack part numbers being replaced or obsoleted by this announcement.

On/Off Capacity on Demand

Description Part number
Parallel Environment Linux D57SSL
PER PROCESSOR DAY OOCOD
TEMP USE CHRG

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This software license includes Software Maintenance, previously referred to as Software Subscription and Technical Support.

License information form number: L-RHAN-6RRR8S

On or near the planned availability date, the LI will be available for review on the IBM Software License Agreement Web site

Limited warranty: Yes

Warranty: This program includes a warranty for one year from acquisition from IBM or an authorized IBM Business Partner. For one year from acquisition of the program, this warranty provides the customer with access to databases containing Program information and FAQs, including any known fixes to defects, which the customer can download or otherwise obtain and install.

Program technical support: Technical support of a program product will be available for a minimum of three years from the general availability date, as long as your Software Maintenance is in effect. This technical support allows you to obtain assistance (via telephone or electronic means) from IBM for product-specific, task-oriented questions regarding the installation and operation of the program product. Software Maintenance also provides you with access to updates, releases, and versions of the program. Customers will be notified, via announcement letter, of discontinuance of support with 12 months’ notice. If you require additional technical support from IBM, including an extension of support beyond the discontinuance date, contact your IBM representative or IBM Business Partner. This extension may be available for a fee.

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Copy and use on home/portable computer: No

Volume orders (IVO): No

Passport Advantage applies: Yes, and through the Passport Advantage Web site at
http://www.ibm.com/software/passportadvantage

Software Maintenance applies: Yes

Software Maintenance, previously referred to as Software Subscription and Technical Support, is included in the IBM International Passport Advantage Agreement. Installation and technical support is provided by the Software Maintenance offering of the IBM International Passport Advantage Agreement. This fee service provides voice and electronic access to IBM support organizations.

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http://techsupport.services.ibm.com/guides/handbook.html

Software Maintenance does not include assistance for the design and development of applications, your use of
programs in other than their specified operating environment, or failures caused by products for which IBM is not responsible under this agreement.

For additional information about the Passport Advantage Agreement, visit the Passport Advantage Web site at

http://www.ibm.com/software/passportadvantage

iSeries™ Software Maintenance applies: No

Variable charges apply: No

Educational allowance available: Not applicable.

On/Off Capacity on Demand

To be eligible for On/Off Capacity on Demand pricing, customers must be enabled for temporary capacity on the corresponding hardware, and the required contract — Z125-6907, Amendment for iSeries and pSeries® Temporary Capacity On Demand — Software — must be signed prior to use.

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Prices

Passport Advantage

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